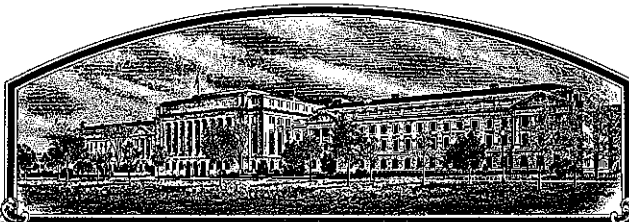


No.



9300052

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

The Andersons

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Karena'

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 29th day of July in
the year of our Lord one thousand nine
hundred and ninety-four.

Attest

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Essey
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) THE ANDERSONS		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. TW 85108	3. VARIETY NAME K arena
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 1200 DUSSEL DR., P.O. Box 119 MAUMEE, OH 43537		5. PHONE (Include area code) 419-893-5050	FOR OFFICIAL USE ONLY PVPO NUMBER 9300052 F I L I N G Date Dec. 28, 1992 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: \$ 2150.00 Date Dec. 28, 1992 R E C E I V E D Certificate Fee: \$ 250.00 Date April 12, 1994
6. GENUS AND SPECIES NAME Triticum Aestivum L.	7. FAMILY NAME (Botanical) Triticine		
8. CROP KIND NAME (Common Name) Soft-white winter wheat	9. DATE OF DETERMINATION May 21, 1991 AAA 50W 1991 per letter		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) LIMITED PARTNERSHIP			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
CHARLES R. CARR, JR. EMPLOYEES OF THE ANDERSONS
ALAN D. BENSCH SAME ADDRESS + TELEPHONE AS ABOVE

PHONE (Include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☐ Exhibit D, Additional Description of Variety.
e. ☐ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
g. ☐ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below) **per correspondence AAA 8/24/92**

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates) **Canada, 1991-92**
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.
The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.
Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) Alan D. Bensch	CAPACITY OR TITLE AG SUPPLIES MANAGER	DATE 12/23/92
SIGNATURE OF APPLICANT (Owner(s)) Charles R. Carr Jr	CAPACITY OR TITLE SUPPLY + DISTRIBUTION MANAGER	DATE 12/23/92

EXHIBIT A - Origin & Breeding History of KARENA

TW85108 is a cross between Augusta and H11 (bulk from which Harus was derived) made at Hyland Farms (Morpeth, Ontario, Canada) in the summer of 1980. The F_1 's were field grown in 1980-81 in a space-planted nursery. Selected plants were harvested and planted into F_2 , F_3 & F_4 bulk long rows (10 m long) in 1981-82, 1982-83 and 1983-84. In the fall of 1984 individual plants (6 heads/plant) were selected and planted as F_5 embryos into separate 3 row plots each 1 m in length. TW85108 was a selected F_6 3 row plot in 1985. The seed was bulked; $\frac{1}{2}$ used for a preliminary yield trial in the fall of 1985; the other $\frac{1}{2}$ used to start the increase of pure seed for future official registration trials in Canada and breeder seed production. It is registered for sale in Canada and is .5 bu/acre higher yielding than Harus after 2 years in state-wide trials.

KARENA appears stable and uniform. Variants include:

- ◁ .15% white chaffed bearded
- ◁ .05% red chaff bearded
- ◁ .05% red chaff bald
- ◁ .10% taller white chaff apically awnletted.

Approximately 4.5% of coleoptiles are white.

EXHIBIT B - NOVELTY STATEMENT

Karena is most similar to Augusta. It differs from Augusta in that Karena has only very slight waxiness of flag leaf sheath while Augusta is quite waxy. Karena has no flag leaf auricle ~~anthocyanine~~ ^{ANTHOCYANINE} colouration while Augusta does. Karena has a square lower glume shoulder and rounded kernel checks while Augusta has rounded lower glume shoulders and angular kernel checks. Karena has approximately 95-96% purple coleoptiles while Augusta's are white. Karena has purple anthers, Augusta green.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

THE ANDERSONS

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

1200 DUSSEL DR., P.O. BOX 119
MAUMEE, OH 43537

FOR OFFICIAL USE ONLY

PVPO NUMBER

9300052

VARIETY NAME OR TEMPORARY
DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 = SOFT 3 = OTHER (Specify)
2 = HARD

1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS 7. Augusta
 NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINE 6 = LEEDS 8. Harus

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH
 CM. TALLER THAN
 CM. SHORTER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS 7. Augusta
4 = LEMHI 5 = NUGAINE 6 = LEEDS 8. Harus

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 = YELLOW 2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT

Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

NO. OF NODES (Originating from node above ground)

Waxy bloom: 1 = ABSENT 2 = PRESENT *very slight*

Internodes: 1 = HOLLOW 2 = SOLID

CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW ?

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT

Hairiness: 1 = ABSENT 2 = PRESENT *few + long*

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify) *intermediate*

Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

MM. LEAF WIDTH (First leaf below flag leaf)
= Harus

Flag leaf: 1 = NOT TWISTED 2 = TWISTED ?

Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT *slight*

CM. LEAF LENGTH (First leaf below flag leaf)
= Augusta

11. HEAD:

☒ 2 Density: 1 = LAX 2 = DENSE ☒ 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

☒ 2 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☒ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

☐ ☐ CM. LENGTH 200158 long, narrow spike ☐ ☐ MM. WIDTH

12. GLUMES AT MATURITY:

☒ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.) ☒ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

☒ 4 Shoulder: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE ☒ 2 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☒ 3 1 = WHITE 2 = RED 3 = PURPLE app. 4.5% white

14. SEEDLING ANTHOCYANIN:

☒ 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☒ 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

☒ 2 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL ☒ 1 Check: 1 = ROUNDED 2 = ANGULAR

☒ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG ☐ Brush: 1 = NOT COLLARED 2 = COLLARED ?

☐ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

☒ 1 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

☐ ☐ MM. LENGTH medium ☐ ☐ MM. WIDTH medium ☒ 36 GM. PER 1000 SEEDS

17. SEED CREASE:

☒ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI' ☒ 2 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☒ 0 STEM RUST (Race) ☒ 1 LEAF RUST (Race) ☒ 0 STRIPE RUST (Race) ☒ 0 LOOSE SMUT

☒ 2 POWDERY MILDEW ☒ 0 BUNT ☒ 1 OTHER (Specify) Root Rot

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☒ 0 SAWFLY ☒ 0 APHID (Bydv.) ☒ 0 GREEN BUG ☒ 0 CEREAL LEAF BEETLE

☐ OTHER (Specify) _____ HESSIAN FLY RACES: ☐ GP ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	<u>Augusta</u>	Seed size	<u>Augusta</u>
Leaf size	<u>Harris</u>	Seed shape	<u>Frankenmuth</u>
Leaf color	<u>Augusta</u>	Coleoptile elongation	<u>Augusta</u>
Leaf carriage	<u>?</u>	Seedling pigmentation	<u>Augusta</u>

INSTRUCTIONS

- GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:
- (a) L. V. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W. E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

RECEIVED
USDA AMS

DEC 23 1992

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EXHIBIT E

STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

All ownership rights and title remain with the developer, W.G. Thompson & Sons Limited, Box 250, Blenheim, Ontario Canada, NOP 1AO. The marketing and production rights and interests of the Karena soft white winter wheat variety for the United States has been transferred to The Andersons.

9300052



The Andersons Management Corp.
P.O. Box 119 Maumee, Ohio 43537 • 419/893/5050

September 23, 1993

United States Department of Agriculture
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351
Attn. Alan A. Atchley

Dear Mr. Atchley:

The following is information you requested for our PV Application Number 9300052, wheat variety 'Karena':

1. In the fall of 1984 individual plants (6 heads per plant) were selected and planted as F5 embryos into separate 3 row plots each 1 meter in length. Karena was a selected F6 3 row plot in 1985. The seed was bulked; 1/2 used for a preliminary yield trial in the fall of 1988; other 1/2 used to start the increase of pure seed for future registration trial seed and breeder seed multiplication.

Karena has been uniform and stable from 1986, in first multiplication.

2. Selection criteria for Karena was strong straw, dense canopy, high yield, and mildew resistance.
3. Protein, milling and baking characteristics from USDA in Wooster, Ohio (1991):

	KARENA	AUGUSTA
Milling Quality Score	99.1	100.0
Baking Quality Score	101.8	100.0
Combined Quality Score	99.1	100.0

9300052

KARENA

AUGUSTA

Break Flour Yield	32.4	31.74
Flour Protein	7.76	7.59
Flour Ash	.416	.442
Millability	98.09	94.32

If you have any questions, or need further information, please give me a call.

Sincerely,



Charlie Carr
Ag Products Group
419-891-6325 (telephone)
419-891-6616 (fax)